

What Is Claimed Is:

1. A transparent thin film titanium dioxide photocatalyst, wherein the crystal size of the titanium dioxide catalyst forming the thin film is 5 nm to 50 nm, the adsorption wavelength peak is in the range of 200 nm to 300 nm and the film thickness is 0.1 to 1.0 microns.

2. The photocatalyst according to Claim 1, wherein the crystal form of the titanium dioxide forming the thin film is a mixed state of spindle-shaped crystals and cubic crystals.

3. The photocatalyst according to Claim 2, wherein said crystals are dispersed in water or alcohol at a compounding ratio of 4:11.

4. A filter, wherein the photocatalyst according to any of Claims 1 through 3 having an adsorption wavelength peak in the range of 200 nm to 300 nm is coated on the surface of a substrate.

5. The filter according to Claim 4, wherein inorganic paper having silicon carbide (SiC) or amorphous silica (SiO₂) as a principal component or inorganic paper having activated charcoal, zeolite or sepiolite as a principal component is used as the substrate.

6. The filter according to Claim 4, wherein a photocatalyst with an adsorption wavelength peak in the range of 200 nm to 300 nm is thin-film coated on the surface of a filter the substrate of which is molded in corrugated

form.

7. An air sterile filtration device, in which the filter according to Claim 4 and a bactericidal ultraviolet lamp are combined.

8. The air sterile filtration device according to Claim 7, wherein two or more filters are arranged parallel to the ultraviolet lamp at distances in the range of 5 mm to 15 mm.

9. The air sterile filtration device according to Claim 7, having an air migration path in which rather than being taken in directly perpendicular to the filter surface, air suctioned toward the filter flows first along the inner surface and then towards the outer surface of the filter or first along the outer surface and then towards the inner surface of the filter.